Amendments to the Claims

Please amend claims 1-7 and add new claims 8 and 9:

IN THE CLAIMS:

1. (Currently amended) A method of indicating the presence of ~~detecting~~ cancer ~~using a laser biocavity having a semiconductor laser including a microchannel through which cells in fluid traverse~~, comprising:

a) determining a ~~the~~ laser wavelength of a ~~the~~ laser biocavity, said laser biocavity comprising a fluid in a microchannel of the laser biocavity, said fluid containing no cells; ~~with only fluid in the microchannel;~~

b) determining a ~~the~~ wavelength shift of the laser wavelength of the laser biocavity when a ~~each~~ cell in the fluid passes through the microchannel of the laser biocavity; ~~and~~

c) categorizing a phase of the cell using the wavelength shift of the laser wavelength of the laser biocavity;

d) determining the phase of a plurality of cells by repeating steps b and c;

e) determining a ~~the~~ percentage of the plurality of cells in a G2 phase ~~from the wavelength shift of the cells; wherein an increased percentage of G2 phase cells is an indication of cancer.~~ ; and

f) comparing the percentage of the cells in the G2 phase to a percentage of a noncancerous cell population in the G2 phase to provide an indication of cancer.

~~determining the shape of the G1 cell distribution, wherein an increased broadth of the G1 distribution is an indication of increased cell growth rate.~~

2. (Currently amended) The method of claim 1 wherein the step of determining the percentage of the plurality of cells comprises counting a ~~the~~ number of the cells which have passed through the microchannel that produce produce a wavelength shift corresponding to the laser wavelength of the laser biocavity containing a cell in a phase selected from a list consisting of G0, G1, S, G2, and M ~~are tested~~, and counting a ~~the~~ number of the cells which have passed through the microchannel that produce ~~with~~ a wavelength shift corresponding to the laser wavelength of the laser biocavity containing a cell in the ~~in a range where~~ G2 phase ~~cells are expected~~.

3. (Currently amended) The method of claim 1 wherein the step of determining the percentage of the plurality of cells in a G2 phase comprises forming a histogram of a ~~the~~ number of the cells as a function of the wavelength shift produced by each of the cells~~,~~ and comparing a ~~the~~ number of cells at a ~~the~~ wavelength shift corresponding to the laser wavelength of the laser biocavity containing the ~~where G2 phase~~ cells in the G2 phase ~~are expected~~ with a ~~the~~ number of cells at a ~~the~~ wavelength shift ~~where~~ corresponding to the laser wavelength of the laser biocavity containing the cells in the G1 phase ~~cells are expected~~.

4. (Currently amended) A method of determining the phase of cells in the cell life cycle ~~using a laser biocavity having a semiconductor laser including a microchannel through which a cell in fluid traverses~~, comprising:

determining a ~~the~~ laser wavelength of a ~~the~~ laser biocavity, said laser biocavity comprising a fluid in a microchannel of the laser biocavity, said fluid containing no cells; ~~with only fluid in the microchannel;~~

determining a ~~the~~ wavelength shift of the laser wavelength of the laser biocavity when a cell in the fluid passes through the microchannel of the laser biocavity; and

determining a ~~the~~ phase of the cell using ~~based on~~ the wavelength shift; ~~wherein there is greater wavelength shift for a cell in G2 phase than a cell in G1 phase.~~

5. (Currently amended) The method of claim 4, further comprising:

determining the wavelength shift of the laser wavelength of the laser biocavity for each of a plurality of the cells in the fluid; ~~and~~

categorizing the phase of each of the plurality of cells as being a G1 phase or a G2 phase using the wavelength shift of the laser wavelength when each of the cells passes through the microchannel of the laser biocavity;

determining a ~~the relative~~ number of cells in the G1 phase and a number of cells in the G2 phase ~~from the number of data points grouped about distinct values of wavelength shift; wherein an increased number of cells in G2 phase is an indication of cancer.~~ ; and

determining whether the ratio of the number of the cells in the G2 phase to the number of cells in the G1 phases is greater than 0.02 to provide an indication of cancer.

6. (Currently amended) A method of determining cell biomolecular concentration, comprising:

determining a laser wavelength of a laser biocavity, said laser biocavity comprising a fluid in a microchannel of the laser biocavity, said fluid containing no cells;

determining a wavelength shift of the laser wavelength of the laser biocavity when a cell in the fluid passes through the microchannel of the laser biocavity ~~measuring the wavelength shift of a few hundred cells in a biocavity laser~~; and

determining by means of ~~from~~ the wavelength shift a biomolecular concentration of the cell ~~the percentage of cells having a concentration greater than the concentration of a normal cell~~.

7. (Currently amended) The method of claim 6, further comprising:

determining a phase of the cell in a cell growth cycle using the biomolecular concentration;

determining the phase for a plurality of cells;

determining a ratio of a percentage of the total of the plurality of cells that are determined to be in the G2 phase with a percentage of a population of noncancerous cells determined to be in the G2 phase.

~~determining that said cells are cancerous if the percentage of cells have a concentration greater than the concentration of a normal cell exceeds a predetermined amount.~~

8. (New) A method of detecting an increased cell growth rate, comprising:

a) determining a laser wavelength of a laser biocavity, said laser biocavity comprising a fluid in a microchannel of said laser biocavity, said fluid containing no cells of a type to be categorized;

b) determining a wavelength shift of the laser wavelength of the laser biocavity when a cell of the type to be categorized in the fluid passes through the microchannel of the laser biocavity;

c) categorizing a phase of the cell of the type to be categorized using the wavelength shift of the laser wavelength of the laser biocavity;

d) determining the phase of a plurality of cells by repeating steps b and c to determining a plurality of wavelength shifts; and

e) determining a shape of a first wavelength distribution of the plurality of the wavelength shifts of a combined G1 phase and S phase cell distribution to provide a measurement of a cell growth rate.

9. (New) The method of claim 8, further comprising:

integrating a second wavelength distribution of the plurality of the wavelength shifts of a plurality of cells in a G2 phase;

integrating the first wavelength distribution of the pluraliy of the wavelengths shifts of the combined G1 phase and S phase cell distribution; and

determining a ratio of an integrated value of the second wavelength distribution to an integrated value of the first wavelength distribution to provide a measurement of a cell growth rate.